LECTURES

ON THE

PATHOLOGY, DIAGNOSIS, AND TREATMENT OF BRIGHT'S DISEASE.

By GEORGE JOHNSON, M.D., F.R.S.,

Physician to King's College Hospital; Professor of Medicine in King's College, London; etc.

LECTURE I.—*Concluded.*

Bright's Disease.—History and Definition of the Term.—General Propositions relating to Bright's Disease. 1. *It is of Constitutional Origin: Proofs of this.* II. *The primary and chief changes occur in the Gland-Cells of the Kidney.* III. *Changes in Basement-Membrane of Tubes and Malpighian Capsules often misinterpreted.* IV. *Changes in Vessels of Kidney and other Organs later and less constant.* V. *Morbid Products appearing as Tube-Casts in the Urine are of great diagnostic value.*—*Mode of examining Urinary Sediments.*

HAVING made yourselves acquainted with the structure and functions of the kidney, you are prepared to enter upon the study of its diseased conditions; and I now propose to give you some account of a most important and interesting class of cases which are usually included under the name of Bright's disease. The history of this term may be very briefly told. Before the time of Dr. Bright, it was known that dropsy and disease of the kidney were sometimes associated. It was also known that some dropsical patients had albuminous urine. (See *Observations on the Nature and Cure of Dropsies*, by John Blackall, M.D., 3rd ed., 1818.) Dr. Bright's great merit and originality consisted in this, that he pointed out the frequent association of dropsy and albuminuria with very striking pathological changes in the kidney. In the first volume of his *Reports of Medical Cases*, published in 1827, he described and represented by beautiful coloured drawings various morbid appearances in the kidney; some kidneys being large and congested; others large and anæmic; and others, again, contracted and granular. He showed that these forms of renal disease are of everyday occurrence; that they are frequently associated not only with dropsy, but with many other formidable secondary diseases; and thus he opened up the great field of renal pathology, which had previously been, for all practical purposes, an almost unknown region. These morbid conditions of the kidney having been made known, it became necessary to give them a name, and various names have been proposed. Rayer used the term "néphrite albumineuse" to designate this class of diseases. The objections to this term are, first, that every form of inflammation of the kidney may be associated with albuminous urine; and second, that some forms of the disease under consideration are not of an inflammatory nature. Dr. Christison called the disease "granular degeneration". The kidneys, it is true, are often granular; but in some of the most characteristic cases they are quite smooth, and not at all granular. Each of these terms, then, being insufficient and objectionable, it has become the custom to designate the morbid states of the kidney by the name of the distinguished physician who discovered them; and so the term "Bright's disease" has come into very general use both in this country and abroad. The term is sufficiently convenient and unobjectionable, if only we can agree upon a definition. The designation Bright's disease seems to involve the idea of unity; and some pathologists have maintained that all the morbid changes in the kidney to which attention was directed by Dr. Bright are the result of a single morbid process in different stages and of various grades of intensity. I shall have no difficulty in convincing you that this view is erroneous. Meanwhile, however, I must ask you to bear in mind that under the name of Bright's disease are included various forms of acute and chronic disease. In the new nomenclature of the Royal College of Physicians, the term is thus explained: "Bright's Disease. *Synonym:* Albuminuria. *Definition:* A generic term including several forms of acute and chronic disease of the kidney, usually associated with albumen in the urine, and frequently with dropsy, and with various secondary diseases resulting from deterioration of the blood."

Accepting this definition of Bright's disease, we shall find that it is nearly synonymous with albuminuria—nearly, but not quite. For, on the one hand, in some quite exceptional cases, both acute and chronic, albuminuria is sometimes absent; and, on the other hand, albuminuria may be unassociated with Bright's disease. For example, the mixture

of blood or pus with the urine of course renders it albuminous; but hæmaturia and purulent urine, although often associated with Bright's disease, may result from other and quite distinct pathological conditions, either general or local. And, again, in the advanced stages of valvular disease of the heart, and in some cases of extreme emphysema of the lungs with bronchitis, albuminuria may be caused by passive congestion of the kidney resulting from an impeded circulation through the heart and lungs, and a consequent engorgement of the whole systemic venous system; yet albuminuria thus originating from purely mechanical causes would not be correctly designated a form of Bright's disease. With these limitations, however, the terms albuminuria and Bright's disease may be looked upon as practically synonymous; and, to avoid wearisome reiteration, I shall employ sometimes one and sometimes the other term.

Now let me impress upon you that, according to the nomenclature and definition of the College of Physicians, Bright's disease is not always and of necessity a hopelessly incurable malady. Under this common designation will be included on the one hand cases as curable as a simple catarrh or a slight pneumonia, and on the other hand cases as intractable as an advanced phthisis. The first great division of cases of Bright's disease is into acute and chronic; and, in any case that comes under your notice, there always arises this most important practical question, Is the disease acute, and therefore probably curable? or is the case one of chronic and advanced degeneration of the kidney, and therefore probably irremediable? A careful study of the entire history of the disease, and of each particular case that comes under your observation, will alone enable you to give a true and trustworthy answer to this question.

Before I proceed to discuss the various forms of Bright's disease, I wish to direct your attention to certain general propositions which are true of all forms of the disease.

Proposition 1. Bright's disease is not a merely local malady, but a disease of constitutional origin; and the proximate cause of the renal disease is, in all probability, a morbid condition of the blood.

The proofs of the blood-origin of Bright's disease are to be found in the entire physiological history of the disease. Much of this evidence will come under our consideration hereafter; but some facts bearing upon the question may with advantage be referred to now.

First, then, the disease is a bilateral disease. The rule is, that both kidneys, receiving the same morbid blood, are both affected, and both by the same form of disease, although the degeneration is sometimes more advanced in one kidney than in the other. The exceptions help to prove the rule. For example, one kidney may be absent or undeveloped; or it may have been destroyed by an abscess or by the impaction of a calculus. Bright's disease occurring in such cases would of necessity be unilateral. But the most instructive case of unilateral Bright's disease that I am acquainted with has been published by Dr. Moxon in the *Pathological Transactions* (vol. xix, p. 268). In a woman aged 34, who died of dropsy, the right kidney had the characters of a large, pale, granular Bright's kidney. "The left, on the contrary, was rather small, and of the colour and appearance of a healthy kidney." A microscopic examination showed the large kidney to be much diseased; the smaller "practically healthy". The explanation of this remarkable difference was found in the fact that the left renal artery was plugged by a very old fibrinous coagulum, probably derived from the interior of the heart. Dr. Moxon, in his interesting comments on this case, suggests that, while one kidney was saved by a diminution or rather a suspension of its function, the other was destroyed by an excess of function. We know, as he says, that an excess of normal function (as, for instance, when one kidney is destroyed by an impacted calculus) is not Bright's disease, but simple hypertrophy of the other. In this case, the result was to aggravate a disease which probably had already commenced. But, with reference to the theory of blood-poisoning, which I am now endeavouring to illustrate, I would suggest that the fibrinous plug saved the left kidney by excluding morbid blood, while it damaged the right by diverting to it a double supply of the same morbid blood. This case, therefore, confirms and helps to explain the rule that Bright's disease is bilateral. The bare nutrition of the left kidney in the case referred to was probably maintained by anastomoses between the renal artery and other branches from the aorta. The kidney may be partially injected from the aorta after ligation of the renal artery. Secondly, confirmatory evidence of the blood-origin of Bright's disease is derived from the fact that the malady occurs in association with constitutional states in which a morbid condition of blood may confidently be assumed to exist. Albuminuria, varying in degree and in duration, has been found more or less frequently associated with scarlet fever, diphtheria, measles, small-pox, erysipelas, pyæmia, typhus and typhoid fever, rheumatic fever, malarious fevers, cholera, purpura, scurvy, dia-

betes, syphilis, certain forms of pneumonia, pregnancy, the absorption of secretions from the interior of the uterus after parturition, gout, the abuse of alcoholic liquors, excessive eating, certain forms of dyspepsia resulting, as may be supposed, in the passage of crude materials into the circulation, a poor and insufficient diet, purulent and other exhausting discharges, and, lastly, suppressed action of the skin by exposure to cold, and especially to cold and wet combined.

Proposition II. The morbid blood, which is assumed to be the proximate cause of Bright's disease in all its forms, exerts its influence primarily and chiefly upon the gland-cells which line the convoluted tubes. Look at a Bright's kidney, or at one of Bright's beautiful plates, and you see at a glance that the cortex or secreting portion of the kidney is the seat of the disease, while the medullary cones, even in the advanced stages of the malady, are left comparatively intact. Analyse the diseased gland with the microscope, and you find that the morbid process has been concentrated, and, as it were, focussed upon the secreting cells within the uriniferous tubes. The kidney, as a great blood-purifier, forms an outlet and a means of escape for many useless and noxious materials which have been developed within the system or introduced from without; and, in the discharge of this excretory function, the gland undergoes the degenerative changes which are designated Bright's disease. The blood in the vessels of the kidney probably contains no more noxious materials than an equal volume of blood in any other tissue—that of the voluntary muscles, for instance; but, during the process of excretion, these products are withdrawn from the blood and concentrated within the gland-cells of the kidney, where they effect the morbid changes in question.

Proposition III. The structural changes which occur in the basement-membrane of the tubes and in the Malpighian capsules are direct results of the intratubular cell-changes.

These changes in the basement-membrane are often very obvious and striking, but they have frequently been misinterpreted. For example, thickening and corrugation of the membranous walls of the tubes have been mistaken by Virchow and his followers for a formation of connective tissue between the tubes, and thus all the phenomena of the disease have been misunderstood.

Proposition IV. During the progress of chronic Bright's disease, the blood-vessels in the kidney and in many other tissues and organs undergo very interesting changes, but these occur later and less constantly than those which effect the secreting tissues of the gland.

Proposition V. The pathological products of the structural changes within the tubes, being carried out by the liquid secretion, escape with the urine and appear in the form of cylindrical casts of the uriniferous tubes; and a microscopical examination of these tube-casts affords most interesting and valuable information as to the nature and the stage of the renal disease. I shall hereafter show you the various forms of tube-casts, and explain to you their diagnostic significance.

Let me remind you that the examination of urinary sediments of all kinds is much facilitated by allowing the urine to stand for a few hours in a four-ounce conical glass. Then a portion of the sediment is to be taken up with a pipette and put into a glass cell, and this, covered with thin glass, is placed beneath a quarter-inch object-glass. The most convenient cell is made by cementing with marine glue a circular flat ring of glass upon the ordinary microscopic slip of glass. These cells are sold by all microscope-makers. One cell, with ordinary care, will last for months. It is a waste of time to hunt for tube-casts in a drop of urine placed between two flat pieces of glass. The glass cell before mentioned holds several drops of sediment, and therefore greatly facilitates the investigation.

DEVONSHIRE HOSPITAL, BUNTON.—The Committee of Management report the increasing usefulness of this hospital. The number of in-patients admitted to the hospital has been more than doubled since the first and the second years of its existence; and the number of in-patients received is greater year after year. During the past year—1872—1,403 in-patients have been admitted to the hospital, or eighty-five more than in 1871. The total number of beds has been raised to 150; and more satisfactory arrangements have been made for the out-patients, the dispensary, and the administrative departments.

TREATMENT OF CHOLERA BY CHLORAL.—In an article in the *Allgemeine Medic. Central Zeitung*, Dr. Blumenthal states that he and two of his colleagues treated eight cholera patients in the Riga Hospital with hydrate of chloral. With the exception of two, all recovered. In one of the fatal cases, the patient was moribund when the chloral was given; the other death occurred in a pregnant woman aged 35. The most obvious effect of the chloral in the cases that recovered was early arrest of the vomiting and diarrhoea.

ABSTRACT OF A LECTURE ON THE THERAPEUTIC USES OF ELECTRICITY.

Delivered at Guy's Hospital.

By SAMUEL WILKS, M.D., F.R.C.P., F.R.S.,

Physician and Lecturer on Medicine at the Hospital; Examiner in Medicine at the Royal College of Surgeons; etc.

At this hospital very little was accomplished with electricity as a therapeutic agent, until Dr. Golding Bird, in the year 1836, had our present room fitted up with an electrifying apparatus, consisting of a cylinder machine, Leyden jar, and insulating stool. He published in the *Guy's Hospital Reports* a valuable series of cases, in which he had used the method successfully. These were followed in after years by a description of other cases, from the pens of Drs. Addison and Gull. The Leyden jar was used to stimulate a lethargic organ, and was, therefore, employed in such cases as amenorrhœa and aphonia. The stool was more usually employed. By its means, the patient who sat upon it was isolated, and, by his holding a chain which was attached to the prime conductor, became charged with electricity; sparks were then drawn from his limbs or spine, according to the part wished to be operated upon. After the introduction of electro-magnetism or faradisation, frictional electricity fell into disuse; but I feel confident that it was not successfully superseded by the new method. For instance, the application of the faradic current to the back was not productive of the same good effect as the withdrawal of the sparks from the same region of the body; and it appears, indeed, that it was the very class of patients, suffering from various forms of paraplegia, and now obtaining good from the continuous battery current, who were benefited in former years by frictional electricity. I therefore feel confident that, by allowing faradisation to supersede instead of supplementing franklinism, we were abandoning a valuable therapeutic agent. We cured by its means cases of paralysis of the legs, chorea, and neuralgia—a class of cases but little benefited by the induced current, and which are now again often cured by the primary battery current. The latter, as well as frictional electricity, appears to arouse the dormant nervous centres.

I think it very questionable whether the discharge of the Leyden jar was of any value in amenorrhœa; and, indeed, it could scarcely be expected, seeing that the arrested function of the uterus is often due to some more general change in the system. As regards its use in aphonia, it no doubt cured many cases of the hysterical form of the complaint, for I have seen it applied on more than one occasion, and the patient has immediately screamed out. I do not for a moment, however, attribute the result to any special attribute of electricity, believing that a good slap in the face would have been equally beneficial. I do not recommend this treatment, as it might be considered barbarous and rouse the anger of newspaper editors, whereas the treatment by a machine and bottle would be *secundum artem*.

Franklinism, or frictional electricity, after having done good service for many years, was thrown into the shade by the brilliant discoveries in electro-dynamics; for it was found that, besides its other properties, the induced current possessed a most powerful effect in exciting contraction of the muscles. The two forms of machine came into use—the magneto-electric and the volta-electric apparatus—according as a permanent magnet or a temporary magnet was employed. It has not yet been decided to which we must give the advantage. In hospital practice, we use a machine where the secondary current is induced in a coil of wire by one or two small galvanic cells; and this is the instrument preferred by Duchenne. It has the advantage of being self-working, and therefore requiring the use of one pair of hands only, besides developing a current which is less painful to the patient. The other, or magneto-electric machine, is in more favour with the public, since it is far easier to find in a dwelling-house a person competent to turn a handle than to understand the mysteries of a galvanic cell.

We are indebted almost entirely to Duchenne of Boulogne for introducing faradisation (as the induced current is now called) to professional notice, and proving its great utility in various forms of paralysis. His services, too, were equally great in demonstrating by its use the